DOCUMENT RESUME

ED 346 152 TM 018 493

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TITLE Analyzing State Differences in Mathematics Performance on NAEP: Can We Identify Links to Policies and Programs?
PUB DATE Apr 92
NOTE 28p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, April 20-24, 1992).
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Comparative Analysis; Educational Assessment; *Educational Policy; Grade 8; Junior High Schools; *Junior High School Students; *Mathematics Achievement; Mathematics Tests; National Competency Tests; National Surveys; Program Evaluation; *State Programs; *Testing Programs; Test Use
IDENTIFIERS *National Assessment of Educational Progress; *Trial State Assessment (NAEP)

ABSTRACT

Since the authorization of the use of the National Assessment of Educational Progress (NAEP) through the Trial State Assessment to provide state-based data, debate over the proposed expansion of the NAEP has strengthened. To assist states in analyzing and interpreting 1990 data on eighth-grade mathematics and to assist in planning subsequent NAEP reports, two analytic strategies were used for this report. To highlight relationships between mathematics achievement and variables explaining variation in achievement on the 1990 NAEP, a series of cross-tabulations was prepared for seven states with higher and seven states with lower mathematics proficiency. Secondly, a set of variables was selected for analysis that would indicate differences across dimensions of state policies, curriculum and instruction, and context for education. Analyses indicate that there is a difference between high and low proficiency states on instructional emphasis, with more stress on Algebra in high proficiency states. While no significant differences were found between high and low achieving states in small-group instruction, there were differences in calculator use in instruction. High proficiency states have more experienced mathematics teachers with more mathematics teacher preparation and better educational resources than did low proficiency states. Parental education level was higher for high achievement states, but high and low achieving states did not differ in terms of family stability and mobility. Fifteen tables and one figure present analysis results. There is a six-item list of references. (SLD)

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Council of Chief State School Officers
State Education Assessment Center

ANALYZING STATE DIFFERENCES IN MATHEMATICS PERFORMANCE ON NAEP: CAN WE IDENTIFY LINKS TO POLICIES AND PROGRAMS?

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Presentation at the American Education Research Association annual meeting,
San Francisco, April 20, 1992.

Symposium title: HOW CAN THE 1990 STATE-BY-STATE NAEP RESULTS BE USED?

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ANALYZING STATE DIFFERENCES IN MATHEMATICS PERFORMANCE ON NAEP: CAN WE IDENTIFY LINKS TO POLICIES AND PROGRAMS?

Since the Alexander/James Commission recommended expansion of the National Assessment of Educational Progress (NAEP) to provide state-level data and the Trial State Assessment was authorized by Congress, policymakers, educators, and researchers have raised questions about the value of "State NAEP." The Department of Education's release of the first NAEP report with state-level results, from the 1990 eighth grade mathematics assessment, has produced renewed debate about the merits of this expanded role for the National Assessment program.

INTRODUCTION AND OBJECTIVES

This AERA presentation examines what can be learned from the state-level NAEP results and how the data and reports from "State NAEP" can be used. The analyses for the presentation are based largely on statistics that were reported in The STATE of Mathematics Achievement (National Center for Education Statistics, 1991). In analyzing the state-by-state results for 8th grade mathematics, our particular interest was in identifying reasons for differences in mathematics proficiency by state, including differences related to state policies and programs and educational practices as well as differences in student characteristics and other context variables. By carefully reviewing and re-analyzing the statistics in the first state-level NAEP report, we hoped to accomplish at least two objectives:

1. Assess the usefulness of the 1990 NAEP state-level data for education policymakers and educators;

2. Identify variables that show some relationship to mathematics proficiency at the state levels to help define needs for further, multivariate analyses with the NAEP state-level data.

The 1990 NAEP mathematics results have been used by state agencies, national organizations, and others to analyze the elements of the condition of mathematics education among and within states. From our work with states, we know that NAEP results are being used to discuss problems and to organize support for mathematics reform. However, it is also the case that few detailed analyses of the state NAEP results have been conducted. Many state-level educators find the initial report provides too much data and it does not focus the key issues for policymakers and educators. Thus, we would like to assist states with analyzing and interpreting the 1990 data, as well as assist in planning succeeding NAEP state-level reports.

ANALYSIS DESIGN

Two analytic strategies were used for this presentation. First, to highlight the presence or absence relationship between mathematics achievement and variables explaining variation in achievement on the 1990 NAEP, we prepared a series of cross-tabulations for two selected groups of states: (a) a group of states with higher average mathematics proficiency, and (b) a group of states with lower math proficiency. Second, a set of variables were selected for analysis that would indicate state differences across dimensions of state policies, curriculum and instruction, and context for education. The following kinds of variables were analyzed:

a. Within-state variation in math proficiency

b. Mathematics curriculum level and emphases

c. Teaching practices

d. Teacher experience and preparation

e. Educational resources

f. State context for education.

States have a clear policy role with some variables, such as teacher preparation, curriculum, resources, and testing. In other areas, such as teaching practices, state policymakers and educators need better information on the extent of variation by state and within state. For each variable that is presented, we determined, first, whether there is variation by state; second, whether there is a relationship of the variable to math proficiency at the state level, and third, whether there is a relationship of the variable to math proficiency at the national level.

The states included in the analyses met two criteria: (a) states that were among the top one-fourth or bottom one-fourth on average mathematics student proficiency, and (b) states that would provide representation on dimensions of geographic region and state population (See Figure 11.2, attached, NCES, 1991). Using these criteria, seven states were selected in the "high math proficiency" group: North Dakota, Nebraska, Wisconsin, Connecticut, New Jersey, Iowa, and Montana; and seven states were selected in the "low math proficiency" group: Texas, California, Florida, North Carolina, Louisiana, West Virginia, and Hawaii. Some of the analyses include the first five states in each group due to the similarity in state results.

The selection of variables for analysis was guided by the Council's role in leading the 1990 NAEP Mathematics Planning Project (1988), the Council's current project on State Science and Mathematics Indicators (Blank and Dalkilic, 1990; CCSSO, 1992), and the NCTM Curriculum and Evaluation Standards (NCTM, 1989). The presentation also used data from a recent ETS report with analyses of the 1990 NAEP data (ETS, Policy Information Center, 1991).

The analysis of differences among states with high and low mathematics proficiency is not intended as a test of cause and effect. Rather, the objective is to highlight state differences on selected variables through univariate descriptive examination of differences and bivariate cross-tabulations of selected variables and average 8th grade mathematics proficiency. If a relationship is found among states on average math proficiency, the variable may be a good candidate for multivariate analyses that would test causal relationships. If no relationship if found among these states at the extremes of high and low proficiency, there is not likely to be a relationship for the full set of states in the 1990 NAEP.

Some of the crosstabular analyses are also likely to highlight the need for further analyses to examine conditionality. For example, extent of teacher preparation in mathematics may be related to average math proficiency at the state level, but the relationship may be stronger (or weaker) with the additional condition of the socio-economic status of students in the sample schools.

PRESENTATION OF ANALYSES

(See attached Tables 1-15)

On each table, state statistics are presented with states grouped under "High Math Proficiency" or "Low Math Proficiency." The state-by-state statistics for the variable were compared to the national average. Then, an indication was made of a likely relationship between the two groups of states on the variable ("YES"), no relationship between the high and low states (NO), or not a significant difference between groups of states ("N.S."). A relationship was indicated (YES) if a majority of states in the high or low group were above (or below) the national average. Thus, an indication of a "state relationship" is not based on all states in the group having high or low scores on the variable. A "significant" relationship in this analysis meant that a majority of states in a group were above (or below) the national average at the 95% level of confidence (plus or minus two standard errors of the estimate for the national sample). Standards errors are not reported on these tables, but they were used in the analyses and are available in The STATE of Mathematics Achievement (NCES, 1991).

SUMMARY OF FINDINGS

The descriptive analyses of variation across states on selected variables reveals that important information about the state's relationship to student mathematics proficiency can be gained from the NAEP state-by-state report. The preliminary cross-tabular analyses also have helped to identify measures of education policies and practices that show some relationship at the state level and should receive further analyses from state-level

policymakers, educators, and researchers.

Within-State Variation. The data show that several states with higher math proficiency scores had significantly lower within-state variation (Table 1). The differences in proficiency at the low and high ends of the proficiency range were also significantly different among the two groups of states.

Curriculum Level and Emphases. The analyses showed that there is a difference between high and low proficiency states on instructional emphasis in eighth grade mathematics (Table 2). Teachers in high proficiency states have less emphasis on Numbers and Operations and more emphasis on Algebra. The teachers in these states also place more emphasis on Learning Facts and Concepts, but there was no significance between the groups of states on teachers' emphasis on Developing Reasoning Ability to Solve Unique Problems.

Several states with high proficiency had lower rates of ability grouping, although the relationship appeared to be linked to regions (Table 3). There is a wide degree of variation among the states on the extent of ability grouping in eighth grade math. There is a strong relationship at the national level between ability groups and teachers' emphases on mathematics content and skills.

No differences were found among the two groups of states in the amount of teaching time for mathematics or the level of courses taught to students (Table 4).

Teaching Practices. No differences were found between the states in the rates of working in small groups (Table 5). The reported rates differed significantly between student and teacher reports. The states with higher math proficiency had significantly more use of

calculators in class than lower proficiency states, and calculator use is related to proficiency scores (Table 6).

State assessment programs in mathematics are very prevalent in both high and low proficiency states (Table 7). There are regional differences in the frequency of school, district, and state-mandated testing as well as teacher-made testing. Students are tested more in the southeast and northeast states than in the midwest or west. However, there is no relationship between frequency of testing and student proficiency.

No differences were found in amount of homework between groups of states (Table 8). Homework does have a strong, positive relationship to math proficiency at the national level.

Teacher Experience and Preparation. The high proficiency states have teachers with more experience teaching math (Table 9). This relationship is likely due to these states having lower population growth and less demand for new teachers, but it may also be due to higher teacher turnover in the low proficiency states. Years of teaching experience (< 10 years, 10-25 years, 25 + years) in math was not related to students math proficiency.

The high proficiency states have significantly more eighth grade teachers with a math major (vs. education major) than the low scoring states (Table 10). Students of teachers with a math major had higher average proficiency than students with an education or other major.

There was little variation in the extent of teacher preparation in methods of teaching middle school mathematics, and the data showed that from 20 to 30 percent of teachers in the states had no methods course. A few states had more teachers with 3 or more methods

courses, but these states were not in the category of high or low proficiency. From 10 to 15 percent of teachers had no math inservice in the past year, while from 30 to 40 percent had 16 hours or more. Teachers in states with low math proficiency had more inservice in math. Student proficiency was not related to extent of teacher preparation in math methods or inservice.

Educational Resources. The states with high proficiency had significantly fewer teachers that reported getting "some or none" of the materials and resources they needed (Table 11). States with high math proficiency have higher average per pupil expenditures (adjusted for cost of living) than the group of states with low math proficiency. Schools in urban advantaged communities have significantly fewer teachers reporting problems in availability of needed instructional materials and resources, and schools in disadvantaged urban communities have significantly more teachers with difficulty getting needed materials and resources (Table 12).

State Context for Education. The level of education of parents of eighth grade students differs significantly by state and parents education is related to math proficiency (Table 13). In addition, within each category of parents education level (less than high school, high school graduate, college graduate), the high proficiency states have higher student scores than the low proficiency states.

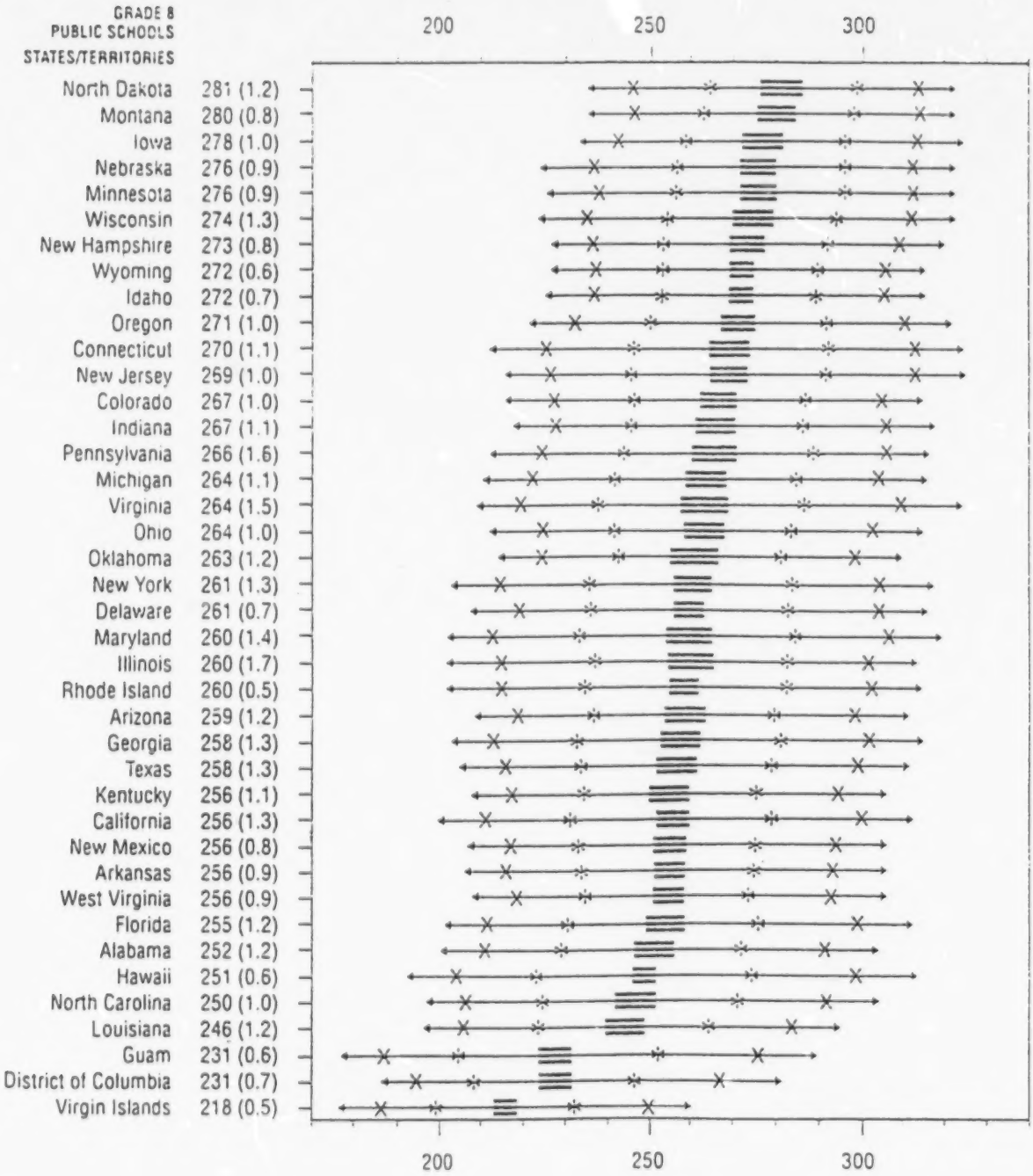
The states with high overall math proficiency have higher scores among advantaged urban schools and among extreme rural schools (Table 14). The proficiency of students in disadvantaged urban schools does not differ among high and low proficiency states.

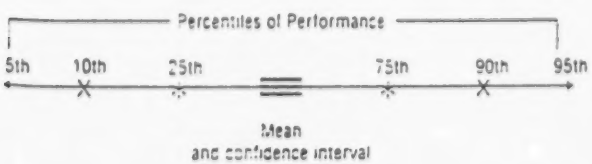
States with high proficiency have slightly fewer students with high family mobility (2

grades or less in state) (Table 15). Differences between high and low states on math proficiency do not vary by category of family stability/mobility.

FIGURE 11.2

Distribution of Overall Mathematics Proficiency
Organized by Average Proficiency





The shaded box indicates a simultaneous confidence interval around the average overall mathematics proficiency for the state based on the Bonferroni procedure for 780 comparisons (the average ±2.83 times its standard error). The remaining symbols indicate values of the 5th, 10th, 25th, 75th, 90th, and 95th percentiles of the distribution of overall mathematics proficiency.

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 1

VARIATION WITHIN STATE

1990 NAEP Mathematics Proficiency
Grade 8

	5TH PERCENTILE	95TH PERCENTILE	DIFFERENCE	AVERAGE
High Math Proficiency				
NORTH DAKOTA	236	322	84	281
NEBRASKA	225	322	97	276
WISCONSIN	224	322	98	274
CONNECTICUT	213	325	112	270
NEW JERSEY	216	325	109	269
Low Math Proficiency				
TEXAS	206	312	106	258
CALIFORNIA	201	313	112	256
FLORIDA	203	313	110	255
NORTH CAROLINA	198	305	107	250
LOUISIANA	198	296	98	246
NATIONAL AVERAGE	207	315	108	261
State Relationship	YES	YES	YES	YES

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 2

INSTRUCTIONAL EMPHASIS: CONTENT & SKILLS

Teachers' Heavy Emphasis

	Numbers & Operations	Algebra	Learn Facts & Concepts	Develop Reasoning to Solve Problems
High Math Proficiency	**% of students**	**% of students**	**% of students**	**% of students**
NORTH DAKOTA	49	56	49	33
NEBRASKA	41	51	57	39
WISCONSIN	37	48	53	38
CONNECTICUT	41	48	53	47
NEW JERSEY	50	55	70	49
IOWA	48	49	54	38
MONTANA	40	58	52	45
Low Math Proficiency				
TEXAS	61	52	61	45
CALIFORNIA	40	46	54	50
FLORIDA	56	42	62	46
NORTH CAROLINA	49	44	59	46
LOUISIANA	57	59	64	38
WEST VIRGINIA	48	41	62	44
HAWAII	46	29	60	42
NATIONAL AVERAGE	49	46	55	45
	264	278	266	274
State Relationship	YES	YES	YES	NO

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 3
PROFICIENCY & ABILITY GROUPING

High Math Proficiency	Teachers' Reports of Ability Grouping % students	Low Math Proficiency	Teachers' Reports of Ability Grouping % students
NORTH DAKOTA	30	TEXAS	63
NEBRASKA	49	CALIFORNIA	72
WISCONSIN	52	FLORIDA	77
CONNECTICUT	86	NORTH CAROLINA	80
NEW JERSEY	78	LOUISIANA	52
IOWA	52	HAWAII	93
MONTANA	46	WEST VIRGINIA	60
	NATIONAL AVERAGE 63		
	State Relationship YES		

Teachers' Heavy Emphasis on Content & Skills
by Ability Groups

	Numbers & Operations	Algebra	Learn Facts & Concepts	Develop Reasoning to Solve Problems
	% of students	% of students	% of students	% of students
High abililty	29	89	60	69
Average	54	42	54	41
Low	60	18	61	28
Mixed	63	43	58	36
Relationship	Yes	Yes	N.S.	Yes

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 4
TEACHING TIME & COURSE TAKING

	Hours per Week	Pre-Algebra	Algebra	Sum of Pre-Alg & Algebra
High Math Proficiency	**Avg.**	**% of students**	**% of students**	**% of students**
NORTH DAKOTA	3.5	17	8	25
NEBRASKA	3.2	20	11	31
WISCONSIN	3.5	17	13	30
CONNECTICUT	3.5	30	17	47
NEW JERSEY	3.6	24	18	42
Low Math Proficiency				
TEXAS	3.3	14	12	26
CALIFORNIA	3.5	21	16	37
FLORIDA	3.5	19	14	33
NORTH CAROLINA	3.8	22	17	39
LOUISIANA	3.7	34	12	46
NATIONAL AVERAGE	3.5	19	15	34
State Relationship	NO	NO	NO	NO

TIME	PROFICIENCY	COURSE	PROFICIENCY
2.5 hrs. less	260	8th gr. Math	251
2.5-4.0	265	Pre-Algebra	272
4.0 +	261	Algebra	296
Relationship	N.S.		YES

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 5
TEACHING: WORK IN SMALL GROUPS

	STUDENTS' REPORTS		TEACHERS' REPORTS	
	Once/more per week	Never	Once/more per week	Never
High Math Proficiency	% of students	% of students	% of students	% of students
NORTH DAKOTA	19	50	38	18
NEBRASKA	27	36	46	6
WISCONSIN	26	40	43	7
CONNECTICUT	30	43	51	12
NEW JERSEY	24	51	44	14
Low Math Proficiency				
TEXAS	23	48	39	10
CALIFORNIA	35	40	59	9
FLORIDA	26	51	48	18
NORTH CAROLINA	23	49	45	11
LOUISIANA	19	60	45	13
NATIONAL AVERAGE	28	44	50	8
State Relationship	NO	NO	NO	NO

SMALL GROUPS	STUDENTS' REPORTS	PROFICIENCY
Once or more per week	28%	258
Less than weekly	28	267
Never	44	261
Relationship		N.S.

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 6

TEACHING: CALCULATORS USE IN CLASS

	STUDENTS' REPORTS	
	Several times per week	Never
High Math Proficiency	**% of students**	**% of students**
NORTH DAKOTA	46	27
NEBRASKA	38	29
WISCONSIN	47	21
CONNECTICUT	27	27
NEW JERSEY	13	55
IOWA	40	22
MONTANA	53	20
Low Math Proficiency		
TEXAS	23	40
CALIFORNIA	32	30
FLORIDA	19	51
NORTH CAROLINA	17	44
LOUISIANA	16	56
WEST VIRGINIA	17	53
HAWAII	17	55
NATIONAL AVERAGE	28	39
State Relationship	YES	YES

CALCULATOR USE	% of students	Proficiency
Several times per week	28	267
Weekly or less	33	263
Never	39	257
Relationship		Yes

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 7

USE OF MATH TESTS

Teacher Reports

	STATE TESTS	School, District, State Tests		Teacher-Made Tests
	1990	1 per week	< 1/week	1/week or more
High Math Proficiency		% of students	% of students	% of students
NORTH DAKOTA	3,5,7,9,11	4	64	56
NEBRASKA	None	4	85	54
WISCONSIN	3,7,10	2	91	57
CONNECTICUT	4,6,8,11	5	92	71
NEW JERSEY	3-8,10,11	9	87	75
IOWA	None	4	83	50
MONTANA	6-11	2	79	53
Low Math Proficiency				
TEXAS	1,3,5,7,9,11,12	12	85	68
CALIFORNIA	3,6,8,12	6	87	57
FLORIDA	3,5,8,10	10	86	72
NORTH CAROLINA	3,6,9,10	3	90	70
LOUISIANA	3,4,6,9,10	16	76	88
WEST VIRGINIA	1-8	3	79	57
HAWAII	3,6,8,10,12	2	89	55
NATIONAL AVERAGE		11	79	61
State Relationship		REGIONAL	NO	REGIONAL

SCHOOL, DISTRICT, STATE TESTS	% of students	Proficiency
1 per week	11	256
< 1 per week	79	265
Never	10	258
Relationship		N.S.

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 8
HOMEWORK PER DAY
Students' Reports: All Subjects

	DON'T HAVE, DON'T DO, 1/2 HR or LESS	2 HOURS or MORE PER DAY
High Math Proficiency	**% of students**	**% of students**
NORTH DAKOTA	35	24
NEBRASKA	34	24
WISCONSIN	34	24
CONNECTICUT	23	31
NEW JERSEY	24	30
Low Math Proficiency		
TEXAS	36	26
CALIFORNIA	28	31
FLORIDA	41	22
NORTH CAROLINA	32	28
LOUISIANA	28	32
NATIONAL AVERAGE	34	24
State Relationship	NO	NO

HOMEWORK	% of students	Proficiency
None assigned	7	248
Don't do it	8	255
1/2 hour or less	19	265
1 hour	42	267
2 hours	17	271
> 2 hours	7	267
Relationship		YES

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 9
TEACHER PREPARATION AND EXPERIENCE

	Average Years Teaching Math	Less than 10 yrs.	Teachers Math Certified	Teachers Math Major
High Math Proficiency		% of students	% of students	% of students
NORTH DAKOTA	15	33	91	61
NEBRASKA	13	41	94	71
WISCONSIN	17	27	74	51
CONNECTICUT	16	30	75	33
NEW JERSEY	15	30	63	41
Low Math Proficiency				
TEXAS	11	54	86	36
CALIFORNIA	12	50	72	22
FLORIDA	12	49	93	32
NORTH CAROLINA	12	51	89	34
LOUISIANA	12	46	59	26
NATIONAL AVERAGE	14	40	84	43
State Relationship	YES	YES	NO	YES

TEACHING MATH	PROFICIENCY	TEACHERS' MAJOR	PROFICIENCY
< 10 yrs	262	Mathematics	268
10-25 yrs	264	Education	258
25+ yrs	265	Other	263
Relationship	N.S.		YES

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 10

TEACHER PREP: MATH METHODS & MATH INSERVICE

	Math Methods--Middle School		Math/Math Teaching Inservice	
	0 Courses	3+ Courses	0 hours	16 hrs
High Math Proficiency	% of students	% of students	% of students	% of students
NORTH DAKOTA	25	26	20	25
NEBRASKA	31	9	15	37
WISCONSIN	20	23	13	32
CONNECTICUT	27	25	8	39
NEW JERSEY	31	17	14	29
Low Math Proficiency				
TEXAS	31	24	13	38
CALIFORNIA	28	31	10	43
FLORIDA	22	21	14	44
NORTH CAROLINA	18	31	10	51
LOUISIANA	31	16	14	37
NATIONAL AVERAGE	28	27	11	39
State Relationship	NO	NO	NO	INVERSE

Math Methods	Proficiency	Math Inservice	Proficiency
0 courses	260	0 hrs	263
1 course	262	1-15 hrs	268
2 courses	265	16 + hrs	263
3 + courses	267		
Relationship	N.S.		N.S.

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 11
RESOURCES

	TEACHERS GET NEEDED MATERIALS: "SOME OR NONE"	EXPENDITURES PER PUPIL (Cost Adjusted) (NEA '89-90)
High Math Proficiency	**% students**	**Avg. $ Per Pupil**
NORTH DAKOTA	35	$3,900
NEBRASKA	22	4,200
WISCONSIN	23	6,000
CONNECTICUT	23	6,300
NEW JERSEY	22	6,700
IOWA	14	5,000
MONTANA	21	4,900
Low Math Proficiency		
TEXAS	29	4,300
CALIFORNIA	34	4,400
FLORIDA	32	5,200
NORTH CAROLINA	36	4,700
LOUISIANA	58	4,100
WEST VIRGINIA	45	4,900
HAWAII	44	NA
NATIONAL AVERAGE	31	$4,900
State Relationship	YES	YES

Type of Community	Teachers' Materials Some or None % Students	Math Proficiency
Advantaged Urban	10	283
Disadvantaged Urban	40	254
Extreme Rural	31	260
Other	29	264
Relationship	YES	

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991 and National Education Association, Estimates of School Statistics, 1990-91.
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 12

TEACHERS GET NEEDED MATERIALS: "SOME OR NONE"		MATH PROFICIENCY AVG. OF STATES
Over 45% of Students: 4 States	Guam, Virgin Islands, District of Columbia, Louisiana	241
41-45%: 3 States	West Virginia, Hawaii, Arkansas	252
36-40%: 4 States	Idaho, New Mexico, North Carolina, Georgia	252
31-35%: 13 States	North Dakota, New York, Ohio, California, Michigan, Oklahoma, Delaware, Rhode Island, Florida, Virginia, Alabama, Arizona, Kentucky	254
26-30%: 4 States	Texas, Indiana, Pennsylvania, Illinois	253
21-25%: 9 States	Oregon, Colorado, New Hampshire, Connecticut, Minnesota, Nebraska, New Jersey, Maryland, Montana	264
20% & Under: 2 States	Wyoming, Iowa	277

Source: ETS Policy Information Center, The State of Inequality, 1991.
and National Center for Education Statistics, The STATE of Mathematics Achievement, 1991.
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 13
PARENTS' EDUCATION LEVEL

	< HIGH SCHOOL		H.S. GRAD		COLLEGE GRAD	
High Math Proficiency	**% students**	**Proficiency**	**% students**	**Proficiency**	**% students**	**Proficiency**
NORTH DAKOTA	4	255	24	273	49	288
NEBRASKA	4	251	27	267	43	286
WISCONSIN	5	253	31	269	34	284
CONNECTICUT	5	242	23	256	47	284
NEW JERSEY	7	250	24	259	45	281
Low Math Proficiency						
TEXAS	17	243	17	245	34	274
CALIFORNIA	11	239	18	242	38	271
FLORIDA	9	236	26	245	37	267
NORTH CAROLINA	11	232	32	241	33	264
LOUISIANA	13	234	33	241	28	254
NATIONAL AVERAGE	10	243	25	254	39	274
State Relationship	YES	YES	YES	YES	YES	YES

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 14

TYPE OF COMMUNITY

School Location

	ADVANTAGED URBAN		DISADVANTAGED URBAN		EXTREME RURAL	
High Math Proficiency	**% students**	**Proficiency**	**% students**	**Proficiency**	**% students**	**Proficiency**
NORTH DAKOTA	9	285	3	xxx	37	280
NEBRASKA	2	xxx	0	xxx	39	278
WISCONSIN	6	296	10	241	24	278
CONNECTICUT	33	286	14	237	0	xxx
NEW JERSEY	30	286	18	237	0	xxx
Low Math Proficiency						
TEXAS	15	276	17	245	9	262
CALIFORNIA	16	278	18	242	0	xxx
FLORIDA	15	271	18	240	8	249
NORTH CAROLINA	4	269	4	242	17	243
LOUISIANA	8	267	23	235	14	236
NATIONAL AVERAGE	10	281	10	249	10	256
State Relationship	YES	YES	NO	N.S.	YES	YES

Urban = in SMSA

Extreme Rural = < 10,000 people in area of school

Advantaged, Disadvantaged, Rural from Principal Questionnaire item on Parents' Occupations

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

Table 15

FAMILY STABILITY/MOBILITY

Grades Attended in State

	2 GRADES OR LESS		3-5 GRADES		5+ GRADES	
High Math Proficiency	**% students**	**Proficiency**	**% students**	**Proficiency**	**% students**	**Proficiency**
NORTH DAKOTA	5	271	5	274	90	283
NEBRASKA	6	272	8	273	86	277
WISCONSIN	4	257	6	271	90	276
CONNECTICUT	6	261	9	268	85	272
NEW JERSEY	5	258	7	272	87	271
Low Math Proficiency						
TEXAS	6	246	8	257	86	261
CALIFORNIA	6	249	10	257	84	259
FLORIDA	12	251	15	261	72	256
NORTH CAROLINA	9	244	9	254	82	252
LOUISIANA	6	243	7	246	87	247
NATIONAL AVERAGE	7	252	7	262	85	264
State Relationship	YES	YES	YES	YES	YES	YES

(Note: LEP Students Excluded)

Source: National Center for Education Statistics, The STATE of Mathematics Achievement, 1991
Council of Chief State School Officers, State Education Assessment Center, 1992

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